AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A method for the automated setting-up of an injection molding machine having an injection screw, said machine for manufacturing injection molded parts, comprising the steps of:

(1) estimating an initial injection stroke of said injection screw;

(2) estimating an initial injection velocity of said injection screw;

(3) generating a substantially uniform velocity profile from said initial injection stroke and said initial injection velocity;

(4) setting initial packing pressure to a minimal value achievable by said machine;

~~(1) manufacturing one or more parts with said machine;~~

~~(2)~~ (5) manufacturing a part with said machine, inspecting said part[[s]] for ~~defects~~ flashing and short shots, and reducing injection stroke in response to any flashing or increasing injection stroke in response to any short shots; and

~~(3)~~ (6) manufacturing a part with said machine, inspecting said part[[s]] for ~~defects~~ flashing and short shots, and reducing injection velocity in response to any flashing or increasing injection velocity in response to any short shots;

wherein ~~either~~ step ~~(3)~~ (6) is employed after step ~~(2) if~~ (5) when step ~~(2)~~ (5) is found to have substantially no effect or substantially no further effect, ~~or~~ and step ~~(2)~~ (5) is employed after step ~~(3) if~~ (6) when step ~~(3)~~ (6) is found to have substantially no effect or substantially no further effect, thereby reducing said ~~defects~~ flashing and short shots, whereby steps (5) and (6) are each employed a plurality of times.

Claims 2-32 (Canceled)

33. (Currently Amended) A method as claimed in claim 1, further including the steps of:

~~(4)~~ (7) determining an optimum injection velocity profile, including:

(i) manufacturing one of more parts with said machine;

(ii) determining an injection pressure profile by measuring injection pressure as a function of elapsed injection time with said machine configured with a substantially constant, desired injection velocity;

(iii) measuring injection velocity as a function of elapsed injection time and determining a profile of said measured injection velocity;

(iv) defining a mean pressure profile from said pressure profile in a regime of substantially constant measured injection velocity profile; and

(v) adjusting said velocity profile over at least a portion of an injection velocity phase in response to said pressure profile to reduce differences between said pressure profile and said mean pressure profile, thereby tending to lessen irregularities in said pressure profile;

~~(5)~~ (8) modifying a post-velocity control phase intermediate set-up obtained after steps (1) to ~~(4)~~ (7) in response to quality defects detected in said parts manufactured with said intermediate set-up to reduce said defects;

~~(6)~~ (9) reducing kickback to an acceptable level to determine a critical packing/holding pressure, including:

(i) setting an initial packing/holding pressure to a default low pressure;

(ii) performing at least a partial injection cycle;

(iii) determining kickback from changes in screw displacement during said at least partial injection cycle;

(iv) incrementing said initial packing/holding pressure; and

(v) repeating steps (iii) and (iv) if kickback is unacceptably high until kickback is reduced to a predetermined acceptable level, or initial packing/holding pressure reaches maximum machine pressure;

~~(7)~~ (10) deducing material solidification time from measurements of screw displacement to determine an optimal packing/holding pressure profile, including:

(i) defining a holding time equal to a predetermined default value;

(ii) performing at least a partial injection cycle;

(iii) measuring a pressure stroke being the change in displacement of said screw between packing time and said holding time;

(iv) incrementing said holding time;

(v) repeating steps (iii) and (iv) until said pressure stroke stabilizes or a part so produced is acceptable;

(vi) defining a linear relationship between screw displacement and time consistent with screw displacement at said packing time and at said holding time, between said packing time and said holding time; and

(vii) defining a gate freeze time as a time of maximum difference between said screw displacement and said linear relationship, thereby providing a value for said gate freeze time from measurements of said screw displacement;

~~(8)~~ (11) modifying a post-pressure control phase preliminary set-up obtained after (1) to ~~(7)~~ (10) in response to defects detected in said parts manufactured with said preliminary set-up to reduce said defects.

34. (Currently Amended) A method as claimed in claim 33, wherein step (iii) of step ~~(6)~~ (9) includes determining kickback from measurements of said screw displacement at packing time, including the steps of:

(a) manufacturing one or more parts with said machine;

(b) defining as a first pressure the end of velocity control phase pressure and as a second pressure the holding time pressure;

(c) defining a linear relationship between packing/holding pressure and time consistent with said first pressure and said second pressure, between said first pressure and said second pressure;

(d) defining said packing time as a time of maximum difference between measured melt pressure and said linear relationship, or as the switchover point if measured melt pressure increases after the switchover point;

(e) determining a first screw displacement being the minimum displacement of said screw before said packing time within a packing/holding phase and a second screw displacement being the displacement of said screw at said packing time; and

(f) calculating said kickback from the difference between said first and second screw displacements, thereby allowing a determination of said kickback from measurements of said screw displacement at packing time.

35. (Currently Amended) A method as claimed in claim 33, wherein step ~~(7)~~ (10) includes the additional steps of:

(viii) repeating steps (vi) and (vii), and defining an initial solidification time between said packing time and said gate freeze time;

(ix) repeating steps (vi) and (vii), and defining an intermediate solidification time between said packing time and said initial solidification time; and

(x) determining an intermediate pressure from the ratio of the screw displacements at said intermediate time and at said gate freeze time, referenced to said packing time.

36. (Previously Presented) A method as claimed in claim 1, including:

measuring a velocity control response time for said injection molding machine, and employing time steps equal to or greater than said velocity control response time.

37. (Previously Presented) A method as claimed in claim 36, wherein said time steps are greater than 1.5 times said response time.

Claims 38-56 (Canceled)

57. (Currently Amended) A method as claimed in claim 34, wherein step ~~(7)~~ (10) includes the additional steps of:

(viii) repeating steps (vi) and (vii), and defining an initial solidification time between said packing time and said gate freeze time;

(ix) repeating steps (vi) and (vii), and defining an intermediate solidification time between said packing time and said initial solidification time; and

(x) determining an intermediate pressure from the ratio of the screw displacements at said intermediate time and at said gate freeze time, referenced to said packing time.

Claim 58 (Canceled)

59. (Previously Presented) A method as claimed in claim 33, wherein nozzle melt pressure, injection cylinder hydraulic pressure, or forward propelling force applied to said screw is used as a measure of, in place of, or to determine, injection pressure.

60. (Previously Presented) A method as claimed in claim 36, wherein said time steps are equal to 2 times said response time.